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To: [McCabe](#)  
[Greg](#)  
CC:  
Date: 2/13/2014 2:46:21 PM  
Subject: MEW 5YR Hydrogeo comments  
Attachments: [5YR Hydrogeo Comments.docx](#)

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Here ya go! See attached.

## **Hydrogeologist Comments**

As requested, we have conducted a technical assessment in support of the five-year review for the Missouri Electric Works Superfund Site, located in Cape Girardeau, Missouri. Our evaluation is limited to providing input on groundwater, human health and ecological risk issues. More specifically, we focused on answering Questions A, B, and C from the U.S. Environmental Protection Agency's "Comprehensive Five-Year Review Guidance," dated June 2001. If you need additional assistance or have any questions regarding our comments, which are provided below, please contact Greg McCabe at x7709, Venessa Madden at x7794, or Dan Nicoski at x7230.

### **General Comments**

Three operating units were designated at the site; Operable Unit 1 - Soil; OU2 – Groundwater; and OU3 – Wetlands. The remedy selected in the 1990 Record of Decision for OU1 included excavation, processing and on-site incineration of soil contaminated with PCBs in excess of 10 ppm to four feet and in excess of 100 ppm at depths greater than four feet. An Explanation of Significant Differences was issued in 1995 that changed the soil treatment technology from incineration to thermal desorption. Excavation and treatment of the approximately 38,000 tons of PCB contaminated soil in excess of 10 ppm from the surface to 27 ft was completed in 2000.

The 2005 ROD for OU2 addressed groundwater in the fractured bedrock and alluvium. A technical impracticability waiver was issued for chemical specific Applicable or Relevant and Appropriate Requirements for the fractured bedrock. Enhanced biodegradation was the primary remedy component for the alluvial aquifer. The other major remedy components for each aquifer are institutional controls, wellhead treatment (where appropriate) and long-term monitoring. An ESD issued in 2013 for the alluvial aquifer changed the remedy from EB to monitored natural attenuation and modified two of the remedial action objectives. Managing the migration of COCs in the fractured bedrock/alluvial groundwater and COC migration from fractured bedrock into the alluvium were removed from the RAOs. The 2005 ROD has not been implemented at the site.

A remedy has not been selected for implementation at OU3.

### **Technical Assessment**

#### **Question A- Is the remedy functioning as intended by the decision document?**

The PCB contaminated soil has been removed and treated on-site. The remedial action has been completed for OU1 and appears to be functioning as intended by the ROD and ESD. Human health risks for this media have been addressed through this action. According to the 2005 ROD,

PCB contamination was detected to the top of the bedrock. The source areas for groundwater impacts are thought to be contamination remaining in the soil in the area of wells MW-3/5/11 on the south east portion of the site and the former transformer storage area.

The selected remedy for OU2 has not been implemented at the site. Groundwater impacts in the bedrock may flow into the alluvium. Institutional controls will apparently be implemented or imposed to prevent exposure to the contaminated groundwater thereby limiting potential exposure and human health risk concerns.

A remedy has not been selected for the wetland area. A remedial investigation and feasibility study is warranted to evaluate selection and implementation of an appropriate remedy in the wetlands area.

- *Is the selected remedy adequate for this site?*

The OU1 remedy included excavation and thermal desorption to treat approximately 38,000 tons of PCB impacted soil at the site. This remedy was appropriate for the site. As indicated, a TI waiver was issued due to the highly variable and fractured nature of the bedrock aquifer. An ESD was issued in 2013 for the OU2 alluvial aquifer that changed the remedy from EB to MNA. This remedy has not been implemented at the site. A remedy has not been selected for OU3.

- *Is the plume stable?*

Monitoring frequencies during this 5YR period for all site associated wells has been insufficient to adequately evaluate plume stability or contaminant trends. For this 5YR the alluvial wells appear to have been sampled four times over two years (2012 – 2013). The bedrock wells were not sampled during this 5YR period. Recommend periodic sampling frequencies.

- *Do contaminant trends indicate the remedy is adequate?*

The remedy for OU2 has not been implemented at this site. As indicated monitoring frequencies are inadequate and contaminant trends for this 5YR period can't be evaluated at this site.

### **Vapor Intrusion (VI) Pathway**

- *Are the COCs of sufficient volatility and toxicity to warrant a VI investigation?*

There are VOCs of sufficient volatility and toxicity that have been detected in groundwater at this site. However, not all site associated wells have been sampled during this 5YR period. The alluvial wells were last sampled in 2013. COC concentrations detected in those wells are

not sufficient to warrant a VI investigation. No current receptors are present in the area of the alluvial wells. On-site wells were apparently last sampled in 2004.

- *Has a VI Investigation been conducted at this site?*

No, a VI investigation was not conducted at this site. Concentrations of several COCs detected in groundwater during the last onsite event could potentially present a VI concern. Although unless there are occupied structures, only a future use scenario would apply. If there are occupied structures, a mitigating factor would be the near surface site geology which consists of 15 ft to 25 ft of silt underlain by gravelly clay. These finer materials would inhibit vapor transport.

- *Is the VI pathway complete? If complete, has the VI concern been adequately mitigated to insure protectiveness?*

A VI investigation was not conducted at this site. Unless there are currently occupied structures, the VI pathway will not be complete.

## **Documents Reviewed/References**

KOMEX, 2005. Groundwater Remedial Investigation, Missouri Electric Works Site, Cape Girardeau, Missouri, January 24, 2005

KOMEX, 2005. Fractured Bedrock Groundwater Remediation Feasibility Study, Missouri Electric Works Site, January 24, 2005

KOMEX, 2005. Fractured Bedrock and Alluvial Groundwater Remediation Feasibility Study, Missouri Electric Works Site, July 5, 2005

Sverdrup Environmental, 2001. Remedial Action Close Out Report, Missouri Electric Works Site, Cape Girardeau, Missouri. OU-1 Soil Remedy. May 01, 2001

U.S. EPA, 1990. Record of Decision Declaration, Missouri Electric Works Site, Cape Girardeau, Missouri, September 1990

U.S. EPA, 2001. Comprehensive Five-Year Review Guidance, Office of Emergency and Remedial Response (5204G), EPA 540-R-01-007, OSWER No. 9355.7-03B-P.  
<http://www.epa.gov/superfund/accomp/5year/index.htm>

- U.S. EPA, 2004. First Five Year Review Report for Missouri Electric Works Site, Cape Girardeau, Cape Girardeau County, Missouri, September 2004
- U.S. EPA, 2005. Record of Decision, Missouri Electric Works Site, Cape Girardeau, Missouri, September 2005
- U.S. EPA, 2009. Second Five Year Review Report for Missouri Electric Works Site, Cape Girardeau, Cape Girardeau County, Missouri, August 2009
- U.S. EPA, 2013. Explanation of Significant Differences for the Missouri Electric Works Superfund Site, Cape Girardeau, Cape Girardeau County, Missouri November, 2013